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DG and DER Policy Ideas for the DG TAC of the NEITF

MEMORANDUM

Subject: DG and DER Policy Ideas for Nevada
Prepared for: DG Technical Advisory Committee, NEITF
Prepared by: Carl Linvill, PhD, Principal
Date: April 20, 2016

1. **The Governors' Accord call for a transition toward a transformed electricity sector that looks different from the one that exists today.**
    a. Specific goals in the Governors' Accord indicate the transformed electricity sector will look different from the electricity sector today in Nevada. For example:
        i. The portfolio of resources evolves toward more zero and low carbon resources;
        ii. The electricity sector will leverage regional exchanges more;
        iii. The electricity sector will engage and empower customers more;
        iv. Innovation by American Companies should be encouraged; and,
        v. The transportation sector will have more vehicles that are electric and that will affect the electricity sector.
    b. The infrastructure required to effectuate the transformation is different from "business as usual," for example:
        i. Investment in communications, information and system control technologies will be necessary to engage and empower customers;
        ii. Distribution system improvements will be necessary to accommodate the Distributed Energy Resources (DERs) that customers want (behind the meter EE, DR, storage, EVs, PV DG and other DG, as well as in front of the meter shared renewable projects and shared storage projects);
        iii. Transmission system improvements to optimize regional engagement may be needed; and,
        iv. Some business as usual investments will be deferred or obviated (e.g., utility built generation, some distribution to serve load growth will be obviated by DG growth, etc.).
    c. Transitioning to the transformed sector envisioned by the Governors' Accord in a cost effective manner thus requires a combination of policies that,
        i. Fairly evaluate the long term cost effectiveness of all resources and align compensation with that fair valuation;
        ii. Support more investment in infrastructure that supports the transformed future and opposes investment in infrastructure and generation that is unnecessary in achieving the transformed sector;
        iii. Provide a stable investment environment that attracts private capital to Nevada in support of utility and non-utility investment; and,
        iv. Provide a stable regulatory environment that fairly compensates the utility.

2. **The policy ideas discussed below focus on four important goals:**
    a. **Promoting a cost effectiveness evaluation and cost allocation process that leads to fair compensation for Distributed Energy Resources should be a goal.**
    b. **Translating cost effectiveness and cost allocation into a rate design that reflects a forward-looking price signal should be a goal.**
    c. **Establishing a stable investment environment that attracts private capital to Nevada and promotes innovation should be a goal.**
    d. **Promoting an IRP process that causes utility infrastructure investment in support of the transformed electric sector envisioned in the Governors' Accord should be a goal.**
3. **Promoting a cost effectiveness evaluation and cost allocation process that leads to fair compensation for Distributed Energy Resources.** The Cost of Service Study (COSS) by itself is inadequate to assess all costs and benefits relevant to implementing policy consistent with the Governors' Accord. The COSS is short term focused, typically does not adequately consider longer term benefits, does not consider the costs and benefits of competing alternatives and does not necessarily consider all relevant costs and benefits consistent with implementing the Governors' Accord. Therefore,
    a. **Policy makers should be clear about the term(s) over which cost effectiveness will be judged (e.g., 1 year, 3 years, 10 years, 20 years, 35 years, etc.).**
        i. The Governors' Accord appears to imply a long-term transformation, and PV DG resources (and all generation resources) produce a long-term stream of costs and benefits so it seems that a long-term period should be used to consider cost effectiveness.
        ii. A COSS focuses on a three-year term and an IRP considers 10 and 20 year terms, so longer terms are considered in IRPs but usually not in conjunction with the COSS, so considering a longer term will require some consolidation of the two analyses.
        iii. Contracts for generation resources may be 1, 3, 5, 10 or even 20 years and central station fossil generation assets typically have 35 year lives, so there is a long history of making decisions about long term assets.
        iv. Therefore, declaring the term over which cost effectiveness will be evaluated for PV DG resources in a manner that ensures fair consideration of costs and benefits relative to resource alternatives is important.
    b. **Policy makers should strive to create a level playing field for all resource alternatives by ensuring all resources are considered fairly in cost effectiveness analysis.**
        i. A fair consideration of cost effectiveness should fairly assess the cost effectiveness of all competing resources from the customer side of the meter (PV DG, other Distributed Energy Resources (like EE, DR, Thermal Storage, Battery Storage, CHP, other DG technologies and EV), from the distribution system (like ground mounted shared renewable projects, community based storage), and from the supply side of the system (grid scale renewables and gas generation).
    c. **Policy makers should direct that cost effectiveness evaluation should include all sources of cost and benefit relevant to implementing the Governors' Accord.**

i. Some costs and benefits are direct impacts on the utility system (e.g., avoided distribution costs, avoided transmission costs, avoided generation costs, avoided line losses, avoided compliance costs, etc. (see the set of costs and benefits upon which the PUC has directed further information to be filed)) and are clearly essential under current statute. The fact that the PUC has declared an intention to include these avoided (and incremental) costs and these benefits indicates that they believe current statute provides the direction they need to include them.

ii. It should be noted that when penetrations of a distributed technology become large and localized there may be incremental costs caused that should be fairly reflected. The NEITF should receive objective expert guidance on what "large and localized" means as this is a technical issue.

iii. Other sources of cost and benefits such as economic development goals, job growth, public health improvement, and ecological resilience might be included under current statute, but the PUC would likely benefit from specific policy direction. If the NEITF determines that some or all of these benefits should be reflected in the cost effectiveness evaluation, they should include language that prescribes their inclusion.

d. **Policy makers should direct that cost effectiveness should recognize the benefits of private investment.**

i. Private investment (investment by residential, commercial, industrial and public sector consumers, third party generation service providers, and third party service providers) is likely to mitigate the cost of ratepayer-insured investment.

ii. When the PUC approves the utility use of ratepayer funds to build a 35-year asset, like a gas or coal plant, those funds are assured recovery (including the opportunity to earn on the cost of capital) over the life of the asset. That is 35-year certainty.

iii. Private investment (e.g., corporate investment in a generation portfolio to serve their needs, individual residential investment to serve their own needs with PV DG or other DERs, or individual investment in a "shared renewable energy project" like a privately owned 2 MW ground mounted solar garden) defers or obviates the need to raise funds from all ratepayers to pay for a 35 year project.

4. **Translating cost effectiveness and cost allocation into a rate design that provides a forward-looking price signal.** The cost effectiveness evaluation and cost allocation steps provide the information needed to establish the rate design. The rate design principles enunciated below are intended to establish price signals that induce economically efficient consumer choice, promote innovation ("dynamic efficiency") and attract investment.

a. **Rate Design Principle 1:** A customer should be able to connect to the grid for no more than the cost of connecting to the grid.

i. This principle implies that the fixed charge portion of the customer's bill should be no more than the line drop, metering, billing and customer service costs needed to serve them. This cost is typically in the rate of $5 to $10 per month on a customer's bill.

b. **Rate Design Principle 2:** Customers should pay for grid services and power supply in proportion to how much they use these services, and how much power they consume.
    i. This principle supports time of use rates that are higher at times when the electricity consumption on the system is high and lower when electricity system use is light.
    ii. To the extent one wants to use "demand charges" the demand charge should be limited to an allocation of cost to the most proximate transformer. This will usually amount to a "demand charge" of no more the $1/KW per month.
c. **Rate Design Principle 3**: Customers that supply power to the grid should be fairly compensated for the fair and full value of the power they supply.
    i. This principle supports time of production export to the grid compensation that is higher when the need for electricity is higher and lower when the need is light. There should be consistency between the magnitude of the time of use price of consumption and the time of use compensation for export production. This alone constitutes the fair value.
    ii. The "full value" mentioned in the principle reflects the "full value" reflected in the cost effectiveness valuation discussed in section 3 above. That is, if a given resource is identified as providing "premium value" owing to preferred policy attributes, then there is a justification for providing premium compensation above the utility cost and benefits alone. This is a policy call that requires a policy decision to "prefer" certain resources to others based on certain attributes they may provide.
d. **The separate rate class issue: Policy makers should consider whether a separate rate class for PV DG promotes fairness among Distributed Energy Resources.**
    i. The time of use consumption rate and the time of production export compensation rates discussed in principles 2 and 3 above put DERs on a level playing field.
    ii. To the extent there are "full value" elements that policy makers want reflected in compensation (e.g., job benefits) those full value elements should be considered in each DER to ensure "full and fair" compensation of each.
    iii. Moving PV DG into a separate rate class will make aligning fair DG compensation with fair compensation for other DERs more difficult.
    iv. Establishing a separate rate class for each type of DER would be very complicated and is likely to tilt the playing field toward some DERs and away from others. Ensuring fair costs and compensation among all DERs might be a policy goal, and if it is, then separate rate classes are not recommended.
e. **The simplicity principle: All else being equal, simplicity is preferred.**
    i. The simplest rate design that comports with the three principles is preferred over less simple alternatives.
    ii. A small fixed charge plus time of use and time of production for export rates (with rates for off-peak, mid-peak and on-peak) is probably the simplest rate design approach that comports with the three principles. In addition, a "super-peak" rate is helpful if the cost of meeting the very highest use hours is very expensive.

5. **Establishing a stable investment environment that attracts private capital to Nevada.** Implementing the Governors' Accord cost effectively requires that investment be attracted to Nevada. The most important factors in attracting investment include a stable policy environment, a stable regulatory environment and reasonable value propositions. The Governors' Accord provides the foundation for a stable policy environment if consistent policies are implemented to support it. The regulatory environment for PV DG is perceived to be unstable at present because the value proposition for existing solar was changed dramatically. The value proposition for PV DG adopters going forward is relatively poor at present. It should be noted that these resources may be built with private investment, utility investment (i.e., all ratepayers pay), or some combination of private and utility investment. In evaluating cost effectiveness of using ratepayer funds to meet the goals of the Governors' Accord, one should consider the possibility of leveraging private funds to mitigate the need for ratepayer funds. Utilities, consumers and third parties respective abilities to attract capital is affected by the policy and regulatory environment going forward.
    a. **A stable investment environment for utilities.** Some investment will be made by the regulated utility and it is in the ratepayers' interest for the utility to be able to attract capital on favorable terms. Clarifying the investment opportunities for the utility on a going forward basis will help the investment environment. "Clarifying" does not mean prescribing what will be invested in. "Clarifying" means communicating the need for infrastructure to support the transitioning grid and clarifying the slice of investment that will include utility financial participation.
    b. **A stable investment environment for consumers.** First, the abrupt change from a very favorable value proposition to a poor value proposition has created instability. The TAC and NEITF are examining the "grandfathering issue" and some favorable resolution of that issue will help to rebuild confidence. Second, as far as the going forward value proposition, over-valuing a resource contributes instability as does under-valuing a resource. Establishing a basis for fair valuation (or fair and full valuation) and committing to an approach will improve the investment environment for consumers. Third, establishing more transparency regarding what the system needs and how consumer DERs can contribute to meeting those needs creates greater certainty.
    c. **A stable investment environment for third parties.** Some third parties will operate through the utility through utility programs and procurements; others will interact directly with the wholesale market or consumers. Creating a favorable investment environment for third parties selling to the utility requires fair and transparent solicitations for energy and services. Creating a favorable investment environment for third parties selling directly to the wholesale market or to consumers requires the utility to excel in becoming a facilitator of third party arrangements.
    d. **Addressing the utility throughput incentive.** Creating a stable investment environment for consumers and third parties is threatening to utility revenues. Utilities make money by building infrastructure and selling energy. Consumer resources limit growth opportunities for the generation side of the business. Third party entry creates competition for a slice of the generation and consumer services part of the utility business. Making the utility a facilitator of consumer resources and third party services requires mechanisms to overcome the throughput incentive. **Decoupling** is one

mechanism that can help and **performance based compensation** is another. A third factor in play in the evolving economics of the utility in Nevada is the merchant transmission and generation function that Berkshire plays separately and apart from NVE. Regionalization, decoupling and performance based compensation are three mechanisms that offer a path for NVE and Berkshire that support a business model of facilitation over a business model of the vertically integrated monopoly.

e. **Consumer protection.** Consumers should understand the value proposition offered by the utility or third parties and they are likely to need objective assistance in evaluating offers. Utilities and third party providers have conflicting interests in serving their respective shareholders. Public agencies like the BCP and the Office of Energy can help to provide that objective evaluation. In addition, some states have founded non-profit third parties that can help consumers to evaluate alternatives. Consumer protection is necessary to create long-term stability in these emerging DER segments.

6. **Promoting an IRP process that causes utility infrastructure investment in support of the transformed electric sector envisioned in the Governors' Accord.** Cost effective implementation of the Governors' Accord requires that the "right" infrastructure be built. The Accord calls for innovation and that innovation includes innovation in the utility, innovation by third parties and innovation by consumers. The utility will be depended upon to build the infrastructure needed to engage consumers and third parties. The utility will be depended upon to contribute to some share of generation and DER related investment. At the same time, cost effective implementation of the Accord requires investment and innovation by third parties and consumers. The IRP going forward will be successful if it clarifies the role of utility investment and the role of private investment in meeting future needs. NEITF and TAC can help to build that clarity by establishing policy that supports innovation and investment by all three in support of cost effective implementation of the Accord.

From: Tom Polikalas [mailto:tpolikalas@swenergy.org]
Sent: Tuesday, April 19, 2016 7:35 PM
To: Rachel White <Rachel.White@lennar.com>
Subject: Jeremy Susac email? Please forward this info

Hi Rachel:
I've been unable to find Jeremy's email. I attended the first meeting of the Technical Advisory Committee he chairs, the Distributed Generation/Storage Committee for the Governor's New Energy Industry Task Force. I submitted hard copies of two documents at that meeting, but thought the links to the websites would be more useful if he would consider sending them to his committee.

The first is how a policy called "Decoupling" would benefit the solar industry and is found at: http://www.seia.org/policy/distributed-solar/utility-rate-structure/utility-revenue-decoupling

The second is from the American Jobs Project's recent study/executive summary, showing 28,000 jobs could be created in Nevada through solar and storage technologies:
http://americanjobsproject.us/wp-content/uploads/2016/03/NV-Jobs-Project-Exec-Summary.pdf

Thank you for forwarding this information to Jeremy.

Regards,
Tom

Solar Energy Industries Association®

Issues & Policies

Utility Revenue Decoupling

Under current regulation, most utilities' revenue generation is tied directly to retail sales, and therefore any reduction in energy consumption directly reduces the companies' profitability. This creates a perverse direct financial disincentive for utilities to support energy efficiency and clean and renewable distributed generation, such as solar energy.

The purpose of a decoupling mechanism is to remove this disincentive, by eliminating the link between electricity sales and profits. Under decoupling, instead of linking utility profits to the amount of power sold, profits are linked to the number of customers served. A simple system of periodic "true-ups" in base electricity rates would either restore to the utility or give back to customers the dollars that were under- or overcollected as a result of fluctuations in electric consumption and retail sales. This will correct for disparities between the utility's actual fixed cost recoveries and the revenue requirements approved by utility regulators. However, a decoupling mechanism alone only removes the disincentive to support energy efficiency and solar energy. To be most effective in promoting energy efficiency and solar energy policies, decoupling should be linked with specific targets and create rewards for utilities for achieving environmental targets beyond their mandates.

A well designed decoupling mechanism does not shift risks from utilities to consumers, but instead shifts the variables that determine utilities' financial health. Instead of increasing profits by increasing sales, utilities should be able to increase profits by improving performance, reliability and service.

Utility Revenue Decoupling Promotes Solar & Energy Efficiency

With a properly-designed decoupling mechanism, utilities are more inclined to promote energy efficiency and solar energy. States such as California, who adopted decoupling in 1981, have had great success with energy efficiency and solar energy. As a result:

- While population steadily grew over the last three decades in California, per capita usage remained flat. California also uses 55% less energy per capita than the nationwide average
- California has invested more money in energy efficiency and solar energy programs than any other state
- In 2006, California accounted for 63% of the national solar market
- Decoupling encourages IOUs to support, not block, state solar programs. It helps eliminate the rationale for utility lost revenue surcharges, which positively affect solar project economics

SEIA supports states adopting a decoupling mechanism that:

- Eliminates the link between utility profits and utility sales
- Rewards utilities for improving performance and reliability
- Encourages maximum energy efficiency and solar energy penetration
- Is developed in conjunction with a system that sets specific energy efficiency and clean distributed generation targets, and rewards utilities for achieving those targets

Topics Tags

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Executive Summary

The American Jobs Project was borne out of two tough problems: the loss of middle-class jobs in America and Congressional paralysis. It seeks to address these problems by taking advantage of one of the biggest market opportunities of our era—the advanced energy sector—and to do so at the state, not the federal level. Policymakers who leverage the unique strategic advantages of their state to grow localized clusters of interconnected companies and institutions are poised to create quality jobs.

Nevada is well-positioned to benefit from the growing demand for advanced energy given the state's strengths in advanced manufacturing and engineering, its abundant natural resources, and its proximity to major markets. There has already been significant investment in advanced energy in Nevada: over $6 billion has been invested in advanced energy products, bringing approximately 1,500 MW of new renewable generation on-line since 2011.[11,12] Opportunities to leverage this momentum to further serve growing regional, national, and global markets offer real benefits for Nevada's economy and good-paying jobs for the state's residents.

Extensive research and interviews with local stakeholders and experts have resulted in identifying two economic clusters showing particular promise: solar energy and batteries.

There are several barriers hindering Nevada's advanced energy industries and preventing supply chains from reaching their full potential. Nevada must address these roadblocks to grow the state's advanced energy sectors and realize economic gains. To take full advantage of these opportunities, Nevada's policymakers can implement policies that increase demand for solar energy applications and battery technologies and help the state's businesses grow, innovate, and outcompete national and international competitors. Indeed, with the right policies, Nevada can strengthen these two clusters and support an annual average of over 28,000 jobs.

This project serves as a research-based guide for state and local leaders who seek to develop smart policies focused on leveraging the state's resources to create good-paying, skilled jobs. The number of jobs created is highly dependent on action taken by state and local policymakers. With concerted effort at the state and local level, more businesses that sell advanced energy products and services will take root in the state. Employees in the advanced energy sector will spend their earnings in the local economy at grocery stores, restaurants, and other neighborhood

sales and use tax and property tax abatements. Tiered incentives could be added to the program to attract large investments.

Use ESCOs to Upgrade Public Fleets: Allow public entities to use performance contracting to upgrade their fleet vehicles. Existing law only allows performance contracting for energy efficiency upgrades to buildings.

Properly Define the Value Utility-Scale Batteries Add to the Grid: Determine whether batteries are a more cost-effective investment than other resources and encourage utility-scale battery manufacturers to invest in Nevada by establishing the proper valuation for energy storage technologies.

Innovation Ecosystem and Access to Capital

Create a Venture Capital Fund of Funds: Launch a private or state-seeded fund of funds to attract the nation's top venture capitalists to Nevada. In addition to providing capital, leading venture capital firms would also bring knowledge, discipline, and expertise to Nevada's entrepreneurs.

Create an Equity Crowdfunding Hub: Streamline entrepreneurs' access to capital through an online platform managed by the state or a state university. Matching grants could help battery and solar energy companies secure funding.

Bolster Nevada's Innovation Centers to Create Innovation Districts: Use tax increment financing to create an innovation district focused on advanced energy. Innovation districts foster collaboration between private enterprises, universities, local governments, and foundations.

Workforce Development

Promote Manufacturing Apprenticeships: Create new job opportunities by providing incentives for companies to hire and train apprentices. Youth apprenticeships could be linked to high school and community college programs.

Establish Early College Programs to Improve STEM Education: Expand early colleges throughout the state, allowing high school students to earn college credits. Industry-specific programs could address the state's existing battery and solar technology skills gaps.

Promote Higher Education Programs in Advanced Energy: Establish an interdisciplinary energy engineering major. Additionally, graduate programs in law and business could add classes focused on energy topics, such as energy law and energy finance.

businesses, and those local establishments will in turn need to hire more employees to satisfy demand. This creates a multiplier effect throughout Nevada's economy, where a single dollar spent in a community will circulate through local businesses and their employees numerous times.

Summary of Policy Recommendations

The analysis presented in this report culminates in four thematic sets of recommendations for Nevada policymakers. Each set of recommendations identifies opportunities for barrier removal and future growth opportunities in the advanced energy sector. While the recommendations are intended to be complementary, each can also be viewed as stand-alone options.

Solar Technology

Strengthen and Expand Property Accessed Clean Energy (PACE): Institute a loan-loss reserve program and create a Property Assessed Clean Energy (PACE) toolkit. PACE financing mitigates the high upfront cost of solar by allowing property owners to finance investments in solar panels with a loan that is repaid through their property tax bills.

Expand the Renewable Energy Tax Abatement Program to Include Manufacturing: Provide partial sales and use tax and property tax abatements to renewable energy manufacturers. Tiered incentives could be added to the program to attract large investments.

Recruit Foreign Direct Investment: Attract foreign companies to boost solar investments within Nevada. Foreign investors can bring manufacturing expertise and resources that are currently lacking in the state's solar economy.

Promote Solar on New Homes: Require homebuilders to either install solar systems on new construction homes or make new houses solar-ready.

Battery Technologies

Expand PACE to Include Battery Systems: Allow property owners to finance battery systems through PACE programs. PACE financing mitigates the high upfront cost of battery systems by allowing property owners to finance their investment with a loan that is repaid through their property tax bills.

Expand the Renewable Energy Tax Abatement Program to Include Battery Deployments and Manufacturers: Extend the existing Renewable Energy Tax Abatement program to allow battery deployments and manufacturers to qualify for partial